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(56) Documents Cited

GB 2136737 A GB 0926555 A GB 0852556 A

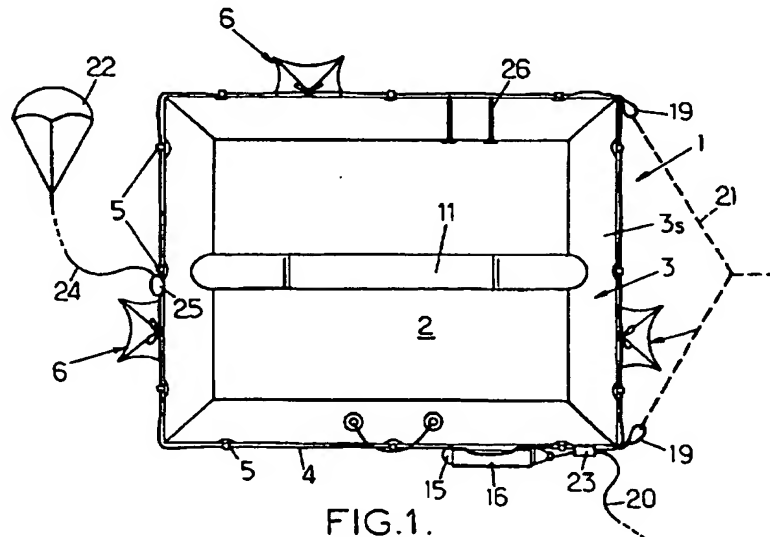
(58) Field of Search

UK CL (Edition Q) B7A AAAH AGX**INT CL⁶ B63C 9/02 9/04 9/26****Online WPI**

(54) Abstract Title

Accessory attachment for a survival raft

(57) A survival raft 1 comprising an inflatable buoyancy fender 3 surrounding a bottom 2, and a halyard 4 fixed to said fender, around the majority of its periphery, wherein accessories of the craft, such as a sea anchor 22, percussion rope 20 and towing rope 21, are fixed to said halyard via couplings 25, 23 and 19 respectively. Said towing rope may be attached to two adjacent corners of the raft, by separate couplings 19. Other accessories, which may be fixed to the halyard, include water pockets 6, a flexible canvas (10, Fig 3) and/or an inflation gas tank 15. Said accessories may have a sliding attachment to the halyard, which may be slackened. The buoyancy fender may be made up of at least two superimposed tubular chambers (3s and 3i, Fig 2), wherein the halyard is fixed to the lower chamber (3i, Fig 2).



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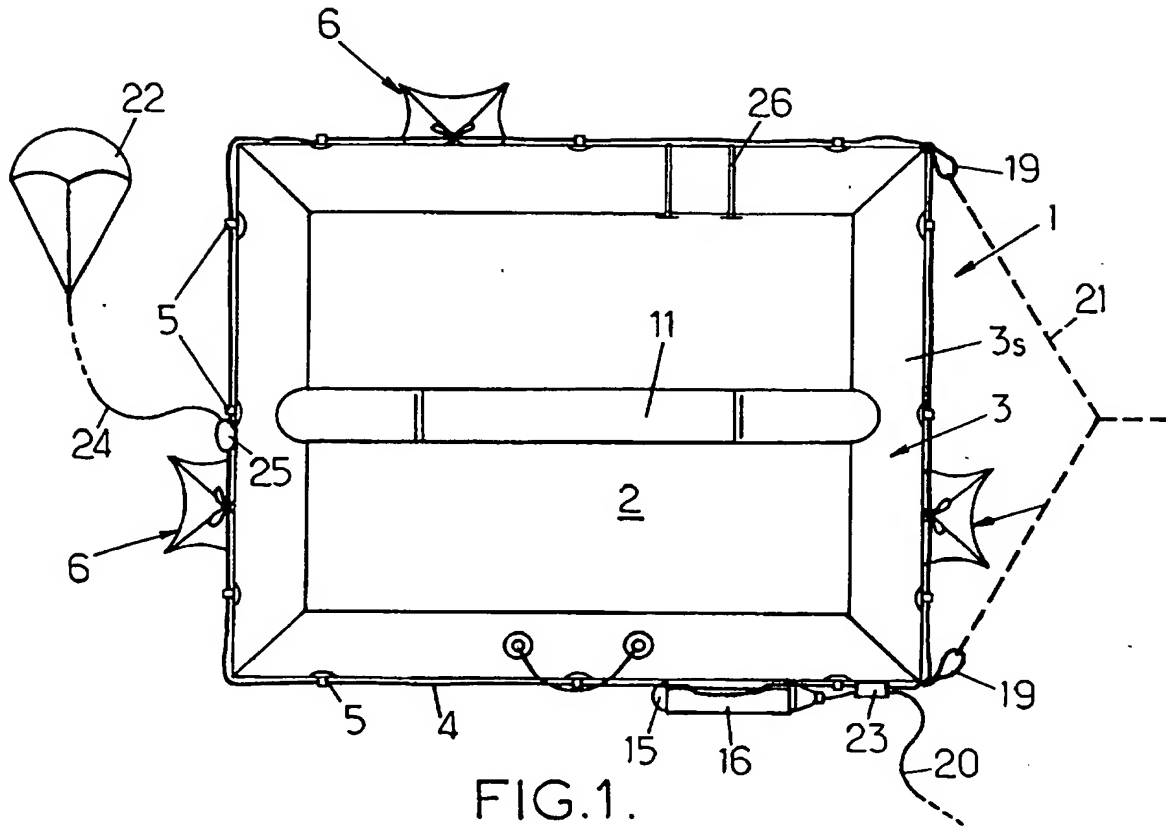


FIG. 1.

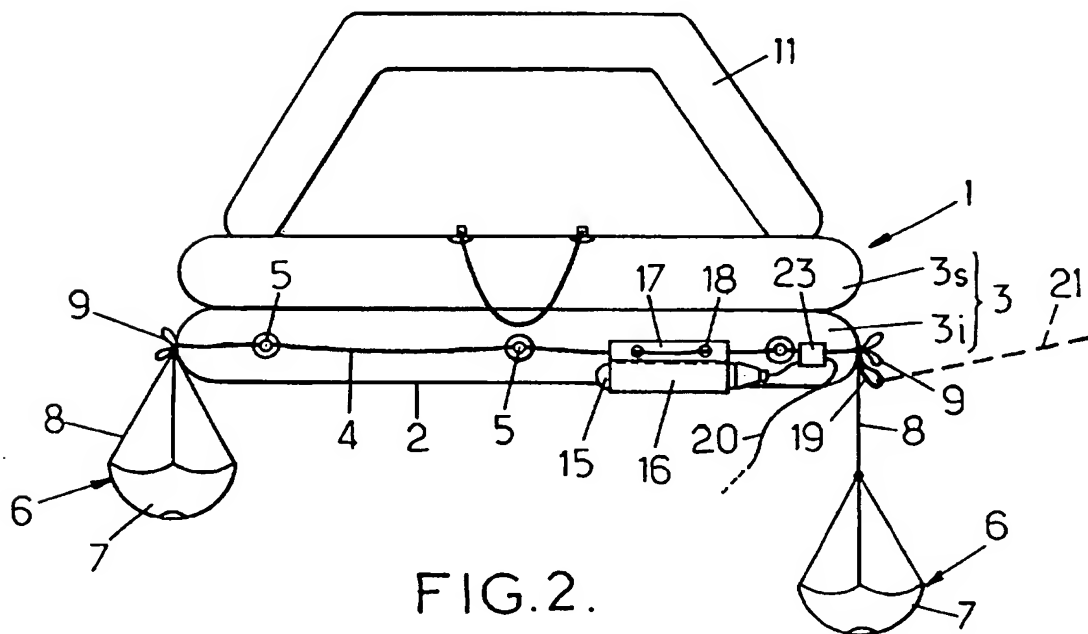


FIG. 2.

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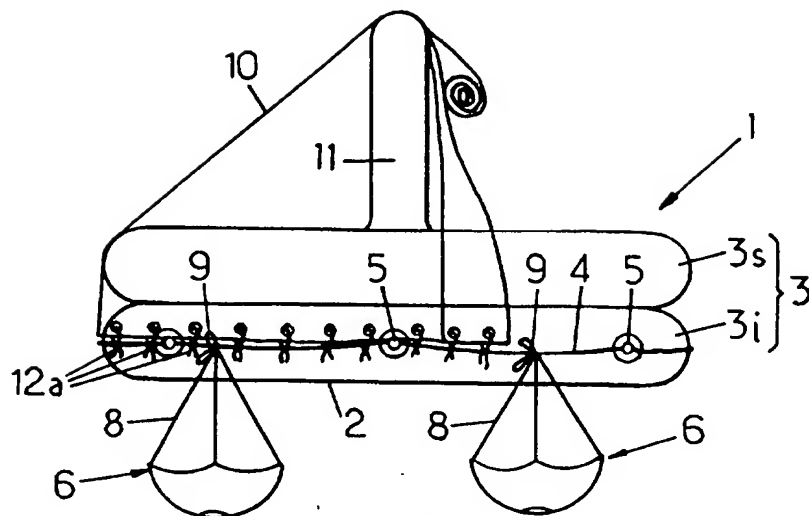


FIG. 3.

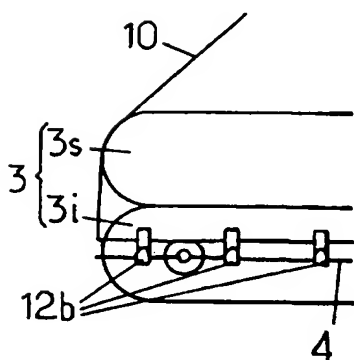


FIG. 4.

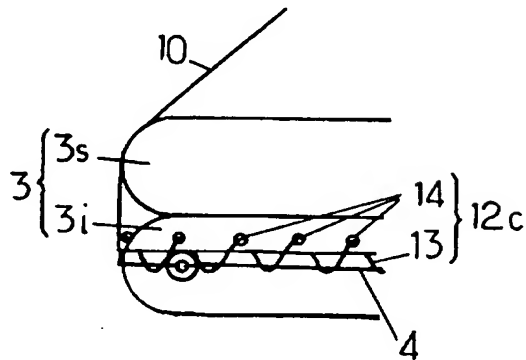


FIG. 5.

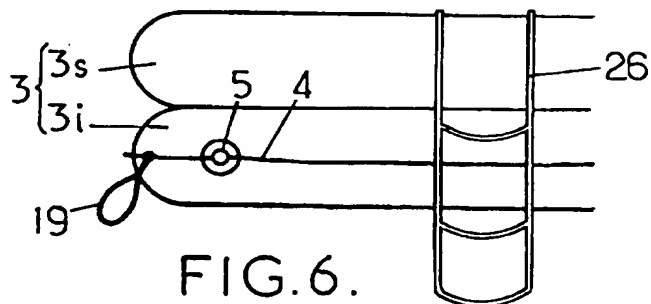


FIG. 6.

CRAFT, IN PARTICULAR A SURVIVAL RAFT

The present invention concerns improvements made to crafts defined by at least one peripheral inflatable buoyancy fender which surrounds a bottom and outside which a halyard is fixed.

The invention particularly concerns, although not exclusively, survival rafts intended to equip pleasure boats or, generally, boats only carrying a limited number of people and hardly ever moving away from the coasts. Under these conditions, the survival rafts, when they have to be used, do not need to have the equipment and the technical qualities as advanced as the survival rafts intended for the high seas, since in principle their period of use should be short.

In such a context, the survival rafts currently known have characteristics greatly exceeding the needs required for coastal sailing, and there exists today a requirement for survival rafts better suited to the actual needs of short sailing and less expensive than those manufactured to date.

Simultaneously, it has seemed necessary to reinforce the fastening of certain accessories of the raft to increase the reliability during the operational use of the raft. Indeed, until now certain accessories – such as the percussion and retaining ropes (serving at the launch of the raft in the water, to the triggering of the firing pin by means of automatic inflation, and to the restraint of the inflated raft driven by the wind and/or the currents), the towing rope and the sea anchor – were carefully fixed to the inflatable fender of the raft, for example by means of a ring held on the fender by a piece of canvas or of rubber added by gluing or welding.

The major drawback of this arrangement is that these accessories can exert possibly extremely significant forces on the fender, because of their position, in causing a shearing of the fastening on the fender and/or possibly a pure and simple tearing of the constituent canvas of the fender. This then results in the loss of the boat, which can prove to be tragic when it is a survival raft.

Another disadvantage of this known arrangement lies in the fact that the fastening locations of the accessories on the boat inflatable fender are fixed, if it

appears desirable in practice for the user to vary these locations, particularly to be able to adapt better to particular circumstances.

The basic object of the present invention is therefore to meet these expectations and to propose an inflatable boat such as a survival raft whose structure has been simplified and therefore less expensively made, all of it
5 being simultaneously reinforced and made capable of more satisfactorily providing the expected functions.

To these ends, an inflatable boat such as that mentioned above and arranged (according to the invention), is characterised by having the halyard to
10 surround fairly tightly at least a major part of the periphery of the inflatable fender and each boat accessory (namely a percussion rope and/or a towing rope and/or a sea anchor which generates a high traction force applied to the buoyancy fender of the said boat) to be fixed to the halyard by means of a coupling.

15 By means of this arrangement, the high traction forces which can be generated by one of the accessories mentioned above (percussion and retaining rope, towing rope, sea anchor) are no longer carefully applied to the buoyancy fender, but are applied to the halyard which, in practice, peripherally surrounds the buoyancy fender; the halyard transmits the force to the boat in a
20 distributed manner around it, consequently with very weakened local forces which do not risk damaging the canvas in any way.

Moreover, the high forces mentioned above are transmitted to the buoyancy fender along a fairly horizontal direction or slightly inclined to the horizontal, which tends to hold the halyard in tight contact with the buoyancy
25 fender that it surrounds.

Beside the fundamental advantages mentioned above, the arrangement (according to the invention) has numerous other advantages leading to a significant reduction in the manufacturing cost of the boats.

Indeed, inflatable boats such as survival rafts are traditionally equipped
30 with a halyard forming a handrail intended to be grabbed hold of by people swimming around the boat. Such a halyard is therefore already present on the boat and it does not constitute an additional part to be added to the boat in using the invention.

However, it is advisable to observe, so as to use the invention efficiently, that the halyard is not fixed too loosely on the fender with a very pronounced curve between two consecutive supports as is often the case in inflatable boats such as survival rafts known to date. It is therefore advisable to make the
5 halyard surround fairly tightly (at least most of it and preferably all of it) the periphery of the inflatable fender, therefore with a small curvature between two successive supports, without it being necessary or desirable that the halyard grips too near the inflatable fender.

In this way, the fastening of the accessories to the halyard will be able to
10 have a finite clearance that however, if held within certain limits, does not constitute a major disadvantage, considering the type of accessory fixed in this way.

The fastening operations of the accessory (or of its support) directly on the craft (inflatable fender or bottom) by a process of welding or gluing are
15 avoided; these are operations which necessitate handling and the use of a machine, and are therefore long and expensive.

In so far as it concerns the accessories mentioned above that are essential for the reliability of using the boat safely, the coupling on the halyard is fixed in principle and not removable except in the workshop.

20 However, in so far as it specifically concerns the towing rope, it can be designed to have this rope not itself permanently fixed directly on the halyard and fixed to the halyard by at least one coupling, which in turn serves as the fastening required by the towing rope. It is beneficial that two coupling parts, which are separated from one another, are fixed to the halyard for the fastening
25 of the towing rope as this will guide the towed boat better; in the case where the boat has a polygonal contour (frequently the case for survival rafts), it is desirable that the two coupling parts are located approximately opposite adjacent corners of the contour of the boat. In practice it proves to be simple and inexpensive for the coupling part to be a flexible collar, forming a handle,
30 fixed to the halyard.

Of course, the arrangements of the invention do not apply exclusively to the accessories mentioned above and can be extended to other accessories. In this case, these other accessories which may be fixed to the halyard include at

least one water pocket and/or a canopy comprising a flexible canvas and/or an inflation gas tank for the craft, and the coupling of these other accessories to the halyard are suitable to obtain a sliding fastening along the halyard; moreover, it may prove to be useful in practice that the sliding coupling can also
5 be slackened.

This is the case, in particular, for the stabilising water pockets located, in the operational position, under the craft bottom. Within the framework of the invention, each water pocket is made up independent of the craft and is provided with coupling suitable to allow its removable coupling to the halyard so
10 as to be positioned under the bottom of the craft.

By means of this arrangement, a significant disadvantage of earlier dinghies of the type considered, in which the water pockets are permanently fixed to the craft bottom and permanently hang under it, is removed. In this case, the fastening of the water pockets to the craft bottom necessitates a
15 specific stage in the manufacturing process, which lengthens it and increases the cost (welding, gluing, etc.). Furthermore, the number of water pockets is fixed once and for all during the design of the craft and cannot be modified later: there do not exist therefore any means of adjusting this number according to the wishes of the user, in particular during sailing to respond to specific
20 requirements. Finally, the presence of filled water pockets hanging under the craft can constitute a nuisance in certain circumstances, for example when the craft is towed particularly during life saving as a survival raft.

On the contrary, by means of the arrangements of the invention, the water pockets become independent of the craft itself. Their number, their
25 structure, their shape and their mounting location are left to the free choice of the user who can adjust these parameters as a function of the requirements of the time. In particular, the number of submerged water pockets can be modified according to the sailing conditions encountered (currents, wind force and direction). Furthermore, during the towing of the craft, the water pockets can be
30 raised, this reduces the drag of the craft and facilitates the towing.

It is a bonus if the means of coupling of the water pocket (which preferably is ballasted) includes at least a flexible connection (rope, cord, etc.) able to be coupled by a knot to the halyard. The water pocket thus becomes a

simple accessory, whose submerged position under the bottom can be adjusted so as to obtain the best conditions of stabilisation for the craft.

Furthermore, when the craft comprises a canopy (in general formed by a canvas often supported by an arch), this canvas is on a part of the perimeter of its lower edge, fixed (welding, gluing, etc) to the buoyancy fender. Then again, this assembly operation lengthens the manufacturing time and increases the production cost. To remove this disadvantage and reduce the cost, it is intended (according to the invention), that the canopy canvas is fixed so that it can be slackened to the halyard mentioned above by means of a fixture, which can include at least one flexible connection (rope, cord, etc.) able to be fixed to the halyard. For example, it can be a matter of multiple laces fixed to the lower edge of the canvas and able to be individually tied around the halyard; it can equally be a cord or something similar passing in the eyelets of the lower edge of the canopy canvas and wound round the halyard; or even hooks fixed to the lower edge of the canopy canvas and suitable to be attached to the halyard.

Similarly, it is usual that the inflation gas tank (generally a cylindrical metal bottle) is supported in a canvas cradle laterally welded to the inflatable buoyancy fender. Again the fixing operation (welding, gluing, etc.) of this canvas forming the cradle lengthens the time and the cost of manufacture. To overcome this drawback, it is intended (according to the invention) that the inflation fluid tank is held in a flexible case and that the case is provided with coupling means to the halyard made up of at least two eyelets passing through by the halyard.

It will also be noted that, when the buoyancy fender is made up of several superimposed tubular chambers, it is preferable that the halyard is fixed to the lower tubular chamber. Better stability is thus given to the craft subject to the high forces (ropes, sea anchor), and a better sealing is ensured for the mounting of the canvas canopy.

The invention will be better understood by reading the detailed description which follows of certain versions given only as non-restrictive examples. In this description, the appended drawings are referred to in which ;

- figure 1 is a diagrammatic plan view of a survival raft arranged according to the invention ;

- figure 2 is a plan view of the raft of figure 1 ;
- figure 3 is a side view of the raft of figures 1 and 2 ;
- figures 4 to 6 show, in partial side view, fitting out various arrangements of the raft of figures 1 to 3.

5 In the following description, reference will be made more specifically to the example of a survival raft, which represents the preferred application of the arrangements of the invention, being understood that the invention is not restricted to this single field and can be applied to other types of dinghies.

Referring first to figures 1 to 3, a survival raft 1 includes a bottom 2,
10 made up of a canvas stretched inside a peripheral inflatable buoyancy fender 3. In the example shown, the fender 3 has a quadrangular polygonal contour (here approximately square) and is made up of two superimposed inflatable chambers, i.e. a lower chamber 3i and an upper chamber 3s.

The general arrangement of the raft 1 is not directly concerned with the
15 invention and can look very ordinary.

A halyard or lashing 4 is fixed by supports 5 over at least a major part of the external periphery of the buoyancy fender 3; preferably in practice, as illustrated in the example shown, it surrounds the whole of the fender 3. In the standard case where the fender 3 is made up of several superimposed
20 chambers, the halyard 4 is fixed on the external perimeter of the lower chamber 3i, as illustrated in the figures, i.e. closer to the level of the centre of gravity of the craft.

Moreover, the halyard 4 tightly fits the longitudinal contour of the inflatable fender 3 (in the case of the lower chamber 3i), without it being
25 however necessary that it is tightened against the wall of the said chamber or that it fits tightly around it, so that it can provide the correct function of the fastening part given to it within the framework of the invention, as is explained below, all of it continuing to provide its function as a gripping handle for people finding themselves in the water.

30 The craft is fitted or can be fitted with accessories made up of a percussion rope 20, and/or a tow rope 21 and/or a sea anchor 22, which all generate high traction forces applied to the buoyancy fender 3 and which can

be fixed to the halyard 4 by means of a coupling, which is in principle fitted in the workshop and not adjustable by the user.

5 The percussion rope 20 is fixed to the halyard 4 near to an inflation fluid tank 15 whose particular fastening will be indicated later. The fastening part 23 of the percussion rope 20 to the halyard 4 is arranged so that the rope 20 can better provide a double function, i.e. to activate by traction the release firing pin of the inflation fluid tank 15 when the deflated craft is thrown into the water and then to hold the craft during inflation, and also when inflated and subject to the action of the currents and/or the wind which tend to move it away from the launching point.

10 The fastening part 23 can consist, as illustrated in figures 1 and 2, of a loop fixed to the halyard 4 and passed through by the percussion rope 23 which slides freely. Alternatively, the rope can be provided with one or several flexible connections that are fixed to the halyard 4 by any means, for example by a tightening olive.

The sea anchor 22 is coupled to the end of a rope 24 whose other end is fixed to the halyard 4 by means of a coupling which can, for example, be in the form of a tightening olive 25 (fig. 1).

20 What is holding the towing rope can be permanently fixed to the halyard 4. However this permanent fixture can be restricting, indeed cumbersome, and it appears desirable that the rope can be removable while making it so that its coupling to the craft is carried out so as to take advantage of the easy connection designed within the framework of the present invention, in view of the very significant forces generated during towing of the craft, particularly on a rough sea.

25 To this end, it is planned to mount at least one coupling part 19 intended for the removable fastening of the towing rope 21 permanently on the craft (illustrated in dashed lines in fig. 1 and 2).

30 Thus, one or several coupling parts 19 for a towing rope, in the form of handles, are fixed by fasteners 19 to the halyard 4. It is also interesting, as illustrated in figures 1 and 2 and in figure 6 which shows this detail to a larger scale, that part or each part 19 is made up of a flexible collar, forming a handle, obtained by tying a rope or cord. In this case, a simple means of fastening to

the halyard 4 consists of tying this rope or cord directly to the halyard; however, a more secure fastening, considering the importance of the forces exerted in the case of towing, consists of providing a mechanical fastener (tightening olive for example). If that is desired, it is also possible to fix a rigid metal handle to the halyard.

In the actual case where the raft is of polygonal shape, particularly square as illustrated, it is a good idea to have each part 19 fixed to the halyard 4 in a corner of the raft; preferably, two parts 9 are arranged in two adjacent corners of the raft.

Always within the framework of the invention, similar arrangements can be envisaged for fastening other accessories to the halyard 4.

Thus, the water pockets 6 planned to equip the craft are made independent of the raft 1 and appear as simple canvas bowls 7 being able to be ballasted and provided with a coupling 8 such as a flexible connection (rope, cord, etc.) which can be fixed to the halyard in any desired way: it is possible to design a clip or hook or something similar; however, the simplest and most economic method consists of making a knot 9 with the flexible connection on the halyard 4, which also has the advantage of being easily able to adjust the submersion depth of the water pocket 6 as illustrated in figure 2. Moreover, by means of this arrangement, the water pockets can be arranged in any desired number and in any desired location on the perimeter of the craft, this number and these locations being able to be modified arbitrarily during sailing. In particular, the water pockets can be raised at will each time that it is necessary, in particular when the craft is towed.

It can also be the same for the canopy of the survival raft made from a flexible canvas 10 centrally supported by an arch 11 which can be of the inflatable type. This canvas 10 can be provided, on its lower edge, with a coupling 12 enabling its removable fastening on the halyard 4. The coupling 12 can be of any type appropriate to the desired use.

In figure 3, the coupling parts 12a are numerous and made up of laces integral with the edge of the canvas and tied to the halyard 4.

In figure 4, the coupling parts 12b are made up of hooks integral with the canvas and hooked around the halyard 4.

In figure 5, the coupling parts 12c include a cord 13 wound in a helix and passing alternately around the halyard 4 and passing through eyelets 14 at the edge of the canvas 10.

5 It is also the same for the inflation fluid tank 15 (fig. 1 and 2) which is held in a flexible case 16, particularly of canvas, which has upper or lateral coupling to the halyard. In the example illustrated, the coupling is made up of a skirt 17 provided with two eyelets 18 through which the halyard 4 is engaged.

It is known that other craft accessories can be fixed to the halyard under the same conditions.

10 It will be noted however, as illustrated in fig. 1 and 6, that it is not intended, within the framework of the invention, to provide the fastening to the halyard 4 of the flexible access ladder with which dinghies such as survival rafts are generally provided to facilitate the boarding of people located in the water. The ladder 26 remains fixed in the usual way inside the craft, in particular at the
15 internal junction of the bottom 2 and the buoyancy fender 3 as visible in figure 1, and this flexible ladder is wound around the fender 3 in order to hang down outside it. The user thus retains the facility of only deploying the ladder 26 in the case of necessity.

20 The arrangements in accordance with the invention enable (while taking advantage of the presence of the halyard on the external perimeter of the inflatable fender) this to play an additional function as the coupling part for various accessories, which can then be designed, manufactured and installed as independent components of the raft itself. The result is a significant simplification in the manufacture of the raft and a significant lowering of its cost
25 price. It also results in a greater ease of use, particularly enabling the user better to adapt the raft to specific conditions of operation.

CLAIMS

1. A craft, in particular a survival raft, defined by at least one peripheral inflatable buoyancy fender (3) surrounding a bottom (2) and outside which a
5 halyard (4) is fixed,

characterised by having the halyard (4) to surround fairly tightly, at least for the most part, the periphery of the inflatable fender (3) and each accessory of the craft, namely a percussion rope (20) and/or a towing rope (21) and/or a sea anchor (22) and which generates a high traction force applied to the
10 buoyancy fender of the said craft is able to be fixed to the halyard by a coupling.

2. A craft according to claim 1, characterised by having at least one coupling part (19) to be fixed to the halyard for the required fastening of a towing rope (21).

3. A craft according to claim 2, characterised by having two coupling
15 parts (19) separated from one another to be fixed to the halyard for the fastening of the towing rope (21).

4. A craft according to claim 3, having a polygonal closed contour, characterised by the two coupling parts (19) and located approximately facing two adjacent corners of the contour of the craft.

20 5. A craft according to any one of the claims 2 to 4, characterised by having the coupling (19) is a flexible collar, forming a handle, fixed to the halyard.

6. A craft according to any one of the previous claims, characterised by other accessories able to be fixed to the halyard and including at least one
25 water pocket (6) and/or one canopy comprising a flexible canvas (10) and/or a craft inflation gas tank (15), and also the coupling of these other accessories to the halyard (4) which are suitable to obtain a sliding attachment along the halyard.

7. A craft according to claim 6, characterised by the sliding coupling
30 which can be slackened.

8. A craft according to claim 6 or 7, characterised by having each water pocket (6) made up independent of the craft and each water pocket provided

with a coupling (8) suitable to attach it to the halyard so that the said pocket is positioned under the level of the bottom of the craft.

5 9. A craft according to claim 8, characterised in having the coupling to include at least one flexible link (8) integral with the water pocket and able to be coupled (9) to the halyard (4).

10 10. A craft according to any one of the claims 6 to 9, characterised by having the canopy (10) to include a flexible canvas whose lower edge covers, peripherally at least partially, the inflated fender (3) and is fixed so as to be slackened to the halyard by means of the said coupling (12).

11. A craft according to claim 10, characterised by having the many couplings to include laces (12a) fixed to the lower edge of the canopy canvas and able to be tied around the halyard (4).

12. A craft according to claim 10, characterised by having the coupling to include a rope (13) or something similar passing in eyelets (14) of the lower edge of the canopy canvas (10) and wound around the halyard (4).

13. A craft according to claim 10, characterised by having the coupling to include hooks (12b) integral with the lower edge of the canopy canvas (10) and suitable to be hooked to the halyard (4).

14. A craft according to any one of the claims 6 to 13, in which the inflation fluid tank (15) is held in a flexible case (16), characterised by having the coupling of the flexible case (16) to the halyard (4) to include at least two eyelets (18) provided in the case and passed through by the halyard.

15. A craft according to any one of the previous claims, in which the buoyancy fender (3) is made up of at least two superimposed tubular chambers (3s, 3i), characterised by having the halyard (4) fixed to the external longitudinal periphery of the lower chamber (3i) of the inflatable fender.



Application No: GB 9914519.5
Claims searched: 1-15

Examiner: Richard Collins
Date of search: 26 October 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): B7A AAAH, AGX.

Int Cl (Ed.6): B63C 9/02, 9/04, 9/26.

Other: Online WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2136737 A (COSALT PLC) figure 1.	1
Y	GB 0926555 A (VIKING MARINE) element 24 in figure 2.	1
Y	GB 0852556 A (R.F.D. COMPANY) figure 1.	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.